

# Highlights®

THE MONTHLY BOOK  
for Children

March  
1973

INCLUDING

Children's  
Activities®

fun

with a  
purpose

Hello!





# Highlights

for Children

Volume 28  
Number 3  
March 1973

This book of wholesome fun is dedicated to helping children grow in basic skills and knowledge in creativity in ability to think and reason in sensitivity to others in high ideals and worthy ways of living—for CHILDREN are the world's most important people

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for Gifted  
Children

Certificate  
of Merit



### Safety



National  
Safety  
Council

Exceptional  
Service  
to Safety

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For Outstanding  
Achievement in  
Bringing About  
a Better  
Understanding  
of the American  
Way of Life

# My Friend

By Helen Rosina

I have a silent company,  
A friend who cannot talk.  
I lay my hand upon his head  
When we go for a walk.

I tell him dreams and troubles  
And he seems to understand,  
For he nuzzles up and gently  
Lays his paw upon my hand.

His brown eyes look up trustingly  
And say, plain as can be,  
"Whatever you want or think or do  
Is sure OK with me!"



## Find the Pictures

Can you find each  
of these small pictures  
at another place in this book?





This chart is to guide parents and teachers  
in selecting features from this issue which will prove  
most helpful to each particular child.

## A Guide for Parents and Teachers

### What Is Emphasized

| Page                      | Preparation for Reading | Easy Reading | More Advanced Reading | Manners, Conduct, Living With Others | Smiles and Laughter | Moral and Spiritual Values | Poetry, Music, and Other Arts | Nature and Science | Our Country, Other Lands and Peoples | Stimulation To Think and Reason | Stimulation To Create |
|---------------------------|-------------------------|--------------|-----------------------|--------------------------------------|---------------------|----------------------------|-------------------------------|--------------------|--------------------------------------|---------------------------------|-----------------------|
| 3 Find the Pictures       | ✓                       | ✓            |                       |                                      |                     |                            | ✓                             |                    |                                      | ✓                               |                       |
| 5 Editorial               |                         |              |                       | ✓                                    | ✓                   |                            |                               |                    |                                      |                                 |                       |
| 6 Juan, the Poor One      |                         |              | ✓                     |                                      |                     |                            |                               |                    |                                      |                                 |                       |
| 8 For Wee Folks           | ✓                       | ✓            |                       |                                      |                     |                            |                               |                    |                                      | ✓                               |                       |
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| 10 Hidden Pictures        | ✓                       | ✓            |                       |                                      |                     |                            |                               |                    |                                      | ✓                               |                       |
| 11 The Shortest Way       |                         | ✓            |                       |                                      |                     |                            |                               |                    |                                      | ✓                               |                       |
| 12 The Bear Family        | ✓                       | ✓            |                       | ✓                                    |                     |                            |                               |                    |                                      |                                 |                       |
| 13 Sammy Spivens          |                         |              | ✓                     | ✓                                    |                     | ✓                          |                               |                    |                                      |                                 |                       |
| 14 The Timbertoes         | ✓                       | ✓            |                       | ✓                                    |                     |                            |                               |                    |                                      |                                 |                       |
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| 16 Mystery-Red Duck       |                         |              | ✓                     | ✓                                    |                     |                            |                               |                    | ✓                                    |                                 |                       |
| 18 Claude Monet           |                         |              | ✓                     |                                      |                     |                            | ✓                             |                    |                                      |                                 |                       |
| 20 First True Bicycle     |                         |              | ✓                     |                                      |                     |                            |                               |                    |                                      |                                 |                       |
| 22 Roan Goes Adventuring  |                         | ✓            |                       |                                      |                     |                            |                               |                    |                                      |                                 |                       |
| 24 Science Reporting      |                         |              | ✓                     |                                      |                     |                            |                               | ✓                  |                                      |                                 |                       |
| 26 One Sister Too Many    |                         | ✓            |                       | ✓                                    |                     |                            |                               |                    |                                      |                                 |                       |
| 27 Fun With Phonics       | ✓                       | ✓            | ✓                     |                                      |                     |                            |                               |                    |                                      | ✓                               |                       |
| 28 Goofus and Gallant     | ✓                       | ✓            | ✓                     | ✓                                    |                     | ✓                          |                               |                    |                                      |                                 |                       |
| 29 Life as an Astronomer  |                         |              | ✓                     |                                      |                     |                            |                               | ✓                  |                                      |                                 |                       |
| 30 Surprise for Aloysius. |                         |              | ✓                     | ✓                                    |                     |                            |                               |                    |                                      |                                 |                       |
| 31 Matching Baskets       | ✓                       | ✓            |                       |                                      |                     |                            |                               |                    |                                      | ✓                               |                       |
| 32 Daniel Hale Williams   |                         |              | ✓                     |                                      |                     |                            |                               |                    | ✓                                    |                                 |                       |
| 34 Origins of Pianoforte  |                         |              | ✓                     |                                      |                     |                            | ✓                             |                    |                                      |                                 |                       |
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| 36 Our Own Pages          |                         | ✓            | ✓                     |                                      |                     |                            |                               |                    |                                      |                                 | ✓                     |
| 37 Letters to the Editor  |                         | ✓            | ✓                     |                                      |                     |                            |                               |                    |                                      |                                 | ✓                     |
| 38 The Sound Detectives   |                         |              | ✓                     |                                      |                     |                            |                               | ✓                  |                                      |                                 |                       |
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| 43 Drawings-Saudi Arabia  |                         |              |                       |                                      |                     |                            |                               |                    | ✓                                    |                                 | ✓                     |

★ This star seen at the bottom of many pages  
indicates a footnote to parents and teachers.

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# Let's Talk Things Over

"I'm going to learn to swim. But I'm busy today.  
I'll start tomorrow."

"I'm a very good pitcher. Our coach says I  
could have a great future in baseball. But I need  
to practice. I think I'll begin tomorrow or the next  
day."

"My teacher thinks I might become a writer. She  
says two of my stories showed real creative ability.  
Maybe I'll write something tomorrow. But it's a lot  
of work to write."

Do you recognize these comments as typical of  
those made by any of your friends, or even by you  
at times?

You may be like Pete, who was one of the bright-  
est boys I have ever known. When he was eight  
he wrote poems which were published in the school  
magazine, and later in his hometown paper. For  
a few months he wrote something almost every day,  
and his writing became better and better. In the  
spring, he played baseball. Pete wasn't very good  
at baseball, but it was fun to play. He watched  
television more than ever before. Gradually he  
wrote less and less until one day when he got his  
report card, he said, "I used to be good in writing,  
but now my grades don't show it."

Of course, we should not work all the time. We  
need to take part in many activities—not just one  
thing. But putting off work may become a habit  
which will influence almost everything we do. We  
may even put off troublesome problems and choose  
instead to watch tv or go to the movies. Putting off  
doing things may become such a strong habit that  
we fail to develop the abilities which might bring  
us great satisfaction.

Nearly everyone has the ability to become out-  
standing in some skill. Examine yourself to find an  
activity in which you think you might excel. You  
may want to learn to swim or to skate well, or  
to be expert in dancing or some musical perform-  
ance. Start practicing now. Skill in any of these  
activities does not come easily. To perform well, you  
must work hard; but a little practice every day will  
help you to improve. Soon you will find yourself  
gaining greater and greater skill. It's a great thrill  
to be recognized as first-rate.

Successful baseball players and other athletes  
work hard but love their work. Many of them enjoy

taking part in a sport so much that it becomes  
their best-liked recreation.

When Leonard Bernstein was a young boy, a  
piano was moved into his home for storage. His joy  
was great. Now he had an opportunity to play  
the music he loved. Practice soon enabled him to  
become a remarkable performer. Creating music  
also became a strong interest and most rewarding  
activity. Edna St. Vincent Millay loved poetry,  
and wrote beautiful verse from the time she was  
very young. She found great joy, too, in writing  
and performing in plays. Much hard work was nec-  
essary in these activities.

The beginning stages in developing a skill may  
require much effort and tiring practice. But the  
effort to improve pays off. One great reward is in  
the pleasure you will have in knowing that your  
efforts have been successful. Another reward is in  
seeing the pleasure your performance—in music, or  
art, or athletics—brings to others, perhaps the  
greatest satisfaction of all.

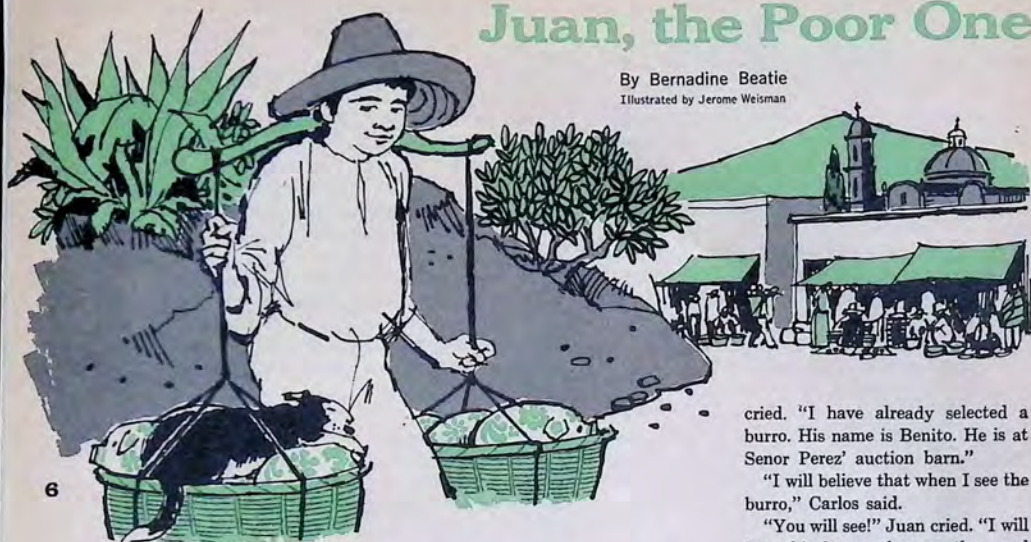
*Paul A. Weiss*





# Juan, the Poor One

By Bernadine Beatie  
Illustrated by Jerome Weisman



6

The large baskets hanging from each side of a yoke across Juan's shoulders were only half-full when he stopped by the shop of Senor Martinez.

"¡Halo!" Juan called, hoping that Senor Martinez would answer instead of his son Carlos. Carlos was only a few years older than Juan, but he was always trying to get Juan to cut his price for delivering merchandise to the market in the city. Indeed, everyone in the village said that Carlos watched his pesos so carefully that he would one day be the richest man in all Mexico. Carlos often called Juan a spend-thrift. Juan supposed he was. Pesos certainly had a way of slipping through his fingers.

"Buenos días, Juan," Mr. Martinez called. He and Carlos came from the shop, carrying two boxes filled with pottery shaped like pigs and painted with bright flowers.

"I wish you could carry more," Mr. Martinez said. "We have several

orders that must be filled by tomorrow."

Juan grinned. "Tomorrow, senor, I can carry them all. Today I am buying a burro!"

Carlos shrugged. "I have heard that before. The last time you had money enough for a burro you brought home paints and canvas for the crippled Pepe. And the time before, two small lambs for the old Senora Juanita."

"Juan's money was well spent," Senor Martinez said. "Pepe has been a different lad since then. Someday he will be a fine artist. And the old senora is always the first to come when anyone in the village needs help."

"But if Juan spends his money foolishly instead of buying a burro," said Carlos, "we will have to hire someone else to make our deliveries. Is that not true?"

"I suppose so," Mr. Martinez said sadly.

"Do not worry, senor," Juan

cried. "I have already selected a burro. His name is Benito. He is at Senor Perez' auction barn."

"I will believe that when I see the burro," Carlos said.

"You will see!" Juan cried. "I will buy this burro, then another, and another. Someday I will deliver glass and pottery for every shop in the village."

Carlos shook his head. "No, Juan. You will always be a poor one like the old senora. She is good and kind, sí; but she has nothing to show for it but a poor house, the lambs you gave her, and a small black-and-white dog, too old to be of any use."

Juan walked thoughtfully down the village street. He would show Carlos. He would not be a poor one all of his life. From now on he would guard each peso. He started whistling a happy tune.

Ahead, Juan saw the small adobe house of the old senora. He expected to see her sweeping the yard or watering the bright flowers blooming in cracked pots and pans, with her dog Paco at her heels. Instead she stood at the gate alone, tears rolling down her cheeks.

"¡Ay de mí!" Juan cried, running forward. "Is something wrong with Paco, senora?"

"Sí, he did not awaken this morning. But do not worry, Juan. Paco was old and tired. He can rest now," the old senora said. She gave Juan a trembly smile and turned away.

Juan's heart was heavy as he walked on. How lonely the old senora would be without Paco. He was still thinking of her when he stopped at the auction barn at the edge of the city.

"¡Halo!" Senor Perez called out. "Did you come for your burro, Juan?"

"Sí, senor," Juan said and counted out the pesos into Senor Perez' hand.

"Benito is tied inside the barn," Senor Perez said.

"I'll fetch him," Juan said.

When Juan stepped inside the barn, he heard a low, eager whining coming from a cage near the door. He smiled. A small black-and-white dog, tail wagging furiously, was thrusting a nose through the slats. The dog looked so much like the old senora's Paco that Juan gave a whistle of surprise.

"Do you want a sheep dog, Juan?" Senor Perez spoke from the door.

"How much does he cost?" Juan asked.

"The same as your burro." Juan's eyes widened. "So many pesos for a small dog?"

Senor Perez shrugged. "And cheap at the price, Juan."

An hour later Juan reached the market. He was not leading a burro. Instead, the small black-and-white dog was sleeping on top of one of the loaded baskets. Juan smiled each time he thought of how happy the old senora would be, and how surprised. He was lucky, too, Juan thought. For when Senor Perez learned that he was buying the dog for the old senora, he had promised

to keep Benito until Juan had saved more pesos.

"I know the old senora," Senor Perez had said. "Once long ago, when my small Anita was sick, she came all this way with herbs to stop the fever. She is a great lady, that one!"

Only when he neared home late that afternoon did Juan start worrying. If Senor Martinez hired someone else to make his deliveries, it would be a very long time before he could save enough money to buy his burro.

As Juan neared the village, he heard laughter and the sound of music. He paused in surprise to see the yard of the old senora filled with visitors. Everyone in the village was there, even Senor Martinez and Carlos. The old senora sat on the porch like a queen, with Pepe beside her. Juan's heart bounded. The old senora's friends had heard of her sadness and had come to comfort her.

Carlos spied Juan and hurried toward him. "I see a dog," he said, "but not a burro."

Juan lifted the dog into his arms. "He is like Paco," he said. "Will not the old senora be happy?" And he ran forward to place the small dog in the old senora's arms.

"¡Ah, ay!" she cried happily. "It

is almost as if I were holding the small Paco."

Carlos came to stand beside Juan. "You will always be a poor one, Juan. You will never have a burro."

The old senora overheard. "Now is the time, Pepe!" she cried.

Pepe rose and limped around the house. He was back in a moment, leading a small burro with a garland of flowers about its neck.

"Benito!" Juan cried. "It is Benito!"

"Sí, Juan," the old senora said, smiling. "Senor Perez was so pleased that you put my happiness before your own that he brought Benito here early this afternoon."

"But I cannot pay for him—not yet," Juan cried.

"Your friends will help," Pepe said, smiling. "I sold two of my pictures."

"And I sold a serape woven from the wool of the two small lambs," the old senora said.

"Juan shall have my business as long as he wants it!" Senor Martinez cried out, shaking a finger under Carlos' nose.

There was a strange look on Carlos' face—a lost lonely look. The old senora reached out and placed a gentle hand on his shoulder. "No one is poor, Carlos, when he has friends," she said softly.

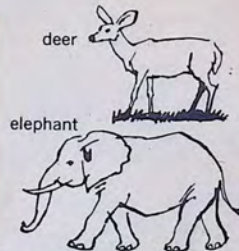
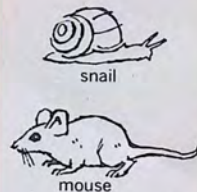
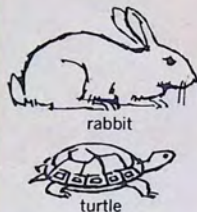


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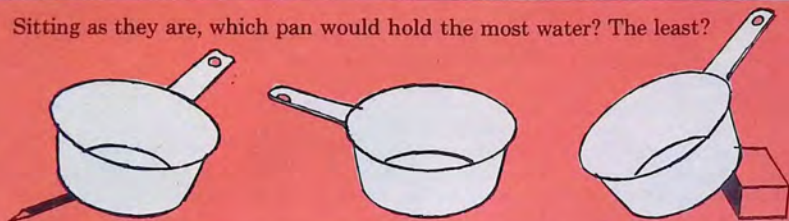


## For Wee Folks

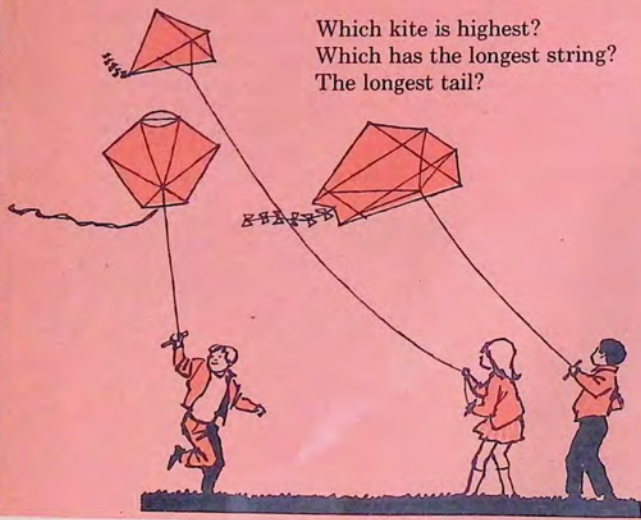
In each pair, which moves faster?



Sitting as they are, which pan would hold the most water? The least?



Which kite is highest?  
Which has the longest string?  
The longest tail?



Which of the following  
would you like to do?

Take a picture with a camera.  
Climb to the top  
of a very tall tree.  
Walk barefoot in the snow.  
Eat cold soup.  
Ride on an elephant.  
Teach a parakeet to talk.  
Listen to a story  
while your father reads to you.  
Sleep on the bare floor.  
Draw a picture of your pet.  
Hold an ice cube in your hand  
till it all melts.  
Walk up a stairway to the  
sixteenth floor.  
Wear shoes too big for you.  
Dress up in your father's  
or mother's clothes.  
Stand on one foot for 20 minutes.

★ A page of thinking features for parents to use with young children.



**What questions could bring these answers below?**

"Oscar can't answer you now. He's at his homework."

"A bee stung me there."

"When the long hand of the clock gets there."

"No, my father said I must not go with you boys."

"Sorry, we have no good steaks today."

"So the frost won't kill them tonight."

"She might choke on it."

going to rain today."

"Next Friday."

"He hit me first."

"I fell into the brook."

"He got his finger in the door when I closed it."

"I can't come now but I'll be there about noon."

"No, I have no letter for you to day."

"I ate only three of them."

"Right here in my ear."

## Now I Am Big



I used to be selfish.



Now I share my things.

## Riddles

**Selected by Children  
Seven to Twelve Years of Age**

1. What runs all around the yard,  
yet never moves?  
Margaret Schellaci—New York
2. What gets wetter and wetter the  
more it dries?  
Kevin Mroczynski—Wisconsin
3. What did the math book say to  
the other math book?  
Wendy Winterling—Florida
4. What is the best way to make a  
fire with two sticks?  
Laurie McCleave—Iowa
5. What did the ram say to his  
sweetheart?  
Lisa Nothstein—New York
6. Why did the orange stop in the  
middle of the road?
7. What keys are too big to put in  
your pocket?  
Diane Staley—Nebraska
8. Why did the farmer feed his cow  
money?
9. What is the difference between a  
postage stamp and a girl?  
Kenneth Hansen—Illinois
10. What is green and can jump a  
mile a minute?  
Chris Garcia—Montana
- Barbara Renciewicz—New Jersey
- Answers:
- hippos.  
feet), and one is female. 10.A grasshopper with  
key. Because he wanted rich milk. 9.One is mail  
ran out of juice. 7.A monkey, a turkey, and a don-  
one of the sticks is a match. 5.I love ewe. 6.A

## Answers

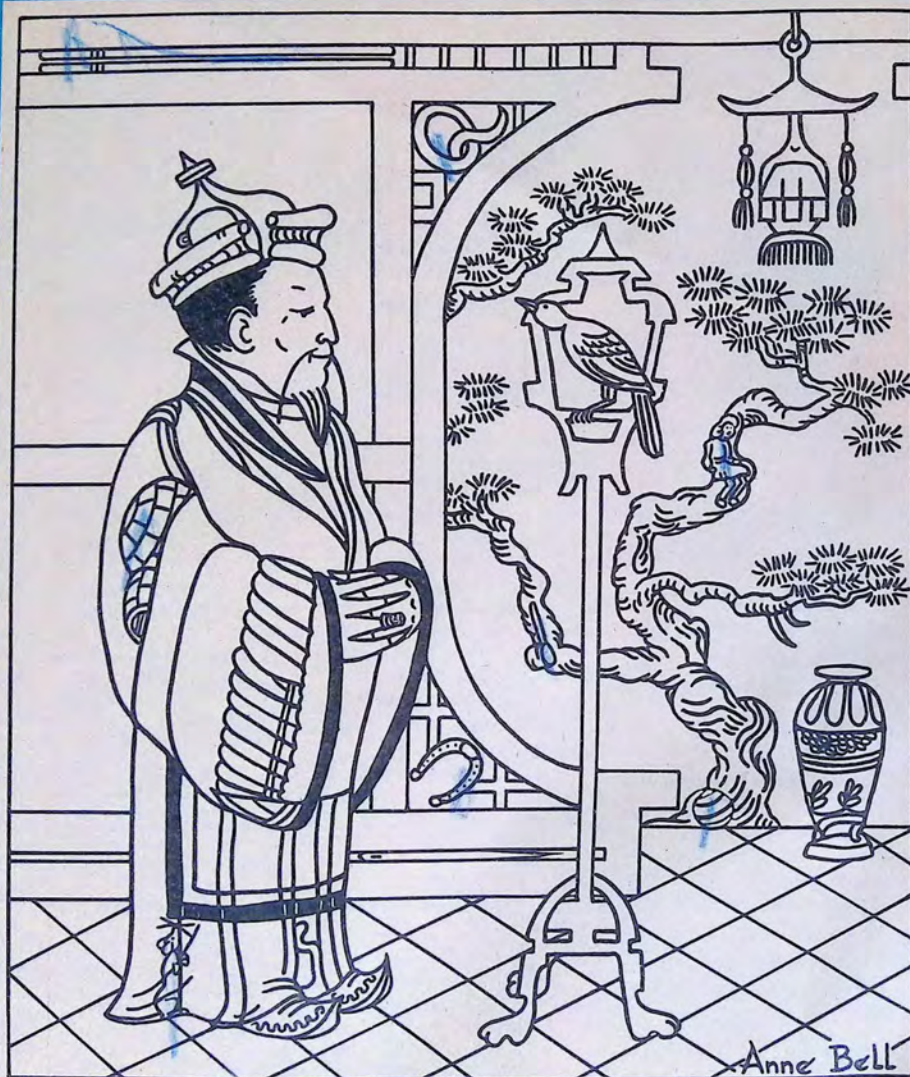
1. The fence. 2. A towel. 3. I have problems. 4. Make sure one of the sticks is a match! 5. I love ewe. 6. I run out of juice. 7. A monkey, a turkey, and a donkey. 8. Because he wanted rich milk. 9. One is male; and one is female. 10. A grasshopper with hiccups.

"Junior, please! Just stay where you are and let me find you."



★ Short, easy-to-read activities.





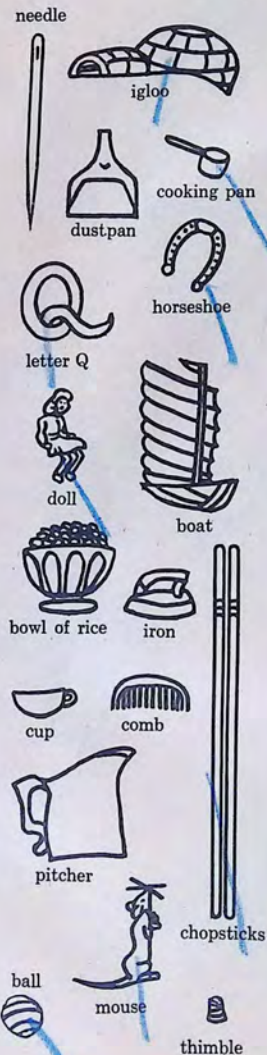
## The Nightingale

### Hidden Pictures

In this big picture find the pitcher, chopsticks, cup, bowl of rice, thimble, needle, iron, igloo, mouse, cooking pan, doll, dustpan, boat, comb, letter Q, ball, horseshoe.

Look on page 11 for little pictures of the hidden objects.

Can you find these objects in the large picture at the left?



★ Illustrated and enjoyable thinking features.



### The Shortest Way

The airplane has landed. What is the shortest way to the building?

### Something To Talk About

Which of the following things would you like to talk about?

When I talked on the telephone for the first time.

When some food boiled over on the stove.

When I play with my dog.

When our cat had baby kittens.

When the baby cried nearly all night.

When my puppy was lost.

When Grandpa visited our house.

When we play games at home.

When the drainpipe was stopped up.

When we made jack-o'-lanterns.

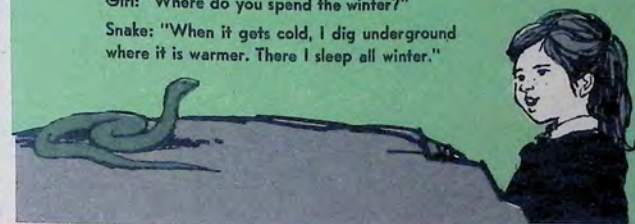
When I lost my first tooth.

When we make things with paper or cardboard.

When the doctor came to see me.

Girl: "Where do you spend the winter?"

Snake: "When it gets cold, I dig underground where it is warmer. There I sleep all winter."





# Handling an Emergency

By Garry Cleveland Myers  
Pictures by Virginia Filson Walsh



Father: "Suppose one of you got hurt while we are away."

Woozy: "I'd telephone Dr. Cook."

Poozy: "Or we could call the hospital if it was bad."

Piddy: "Nobody's going to get hurt."

12



Poozy: "Come quick, Woozy. Piddy has fallen out of a tree."

Woozy: "Keep him still. I'll call Dr. Cook."



Woozy: "Dr. Cook, our parents are away and Piddy is hurt."

Dr. Cook: "I'll come as soon as I can."

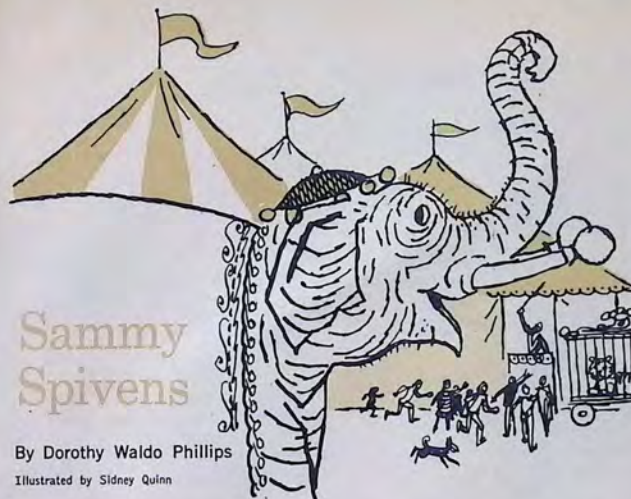


Poozy: "Piddy fell from a tree and broke his elbow. Dr. Cook X-rayed it and set it."

Mother: "You used your heads."

Piddy: "It doesn't hurt much. Look at my cast."

★ The children assume responsibility at a critical time.



By Dorothy Waldo Phillips

Illustrated by Sidney Quinn

Hello there:

"Here comes March. Whoopee!" yelled Sammy.

March brings Captain Caranza's Circus to town. The Captain and Sammy's dad were boyhood friends, so it is with pleasure that Mr. Spivens offers the two large fields that adjoin the Spivens cottage in the meadow.

Once there, the circus crews are busy for three weeks. The children love to watch them erecting the huge tent. They have a chance to make friends with the many animals ahead of time. And what fun to watch their favorite clown, Bozo, practicing his famous romp around the ring in a crazy old car that keeps falling apart amidst loud explosions and toot-toots.

Sammy, president of the C.O. Club (Considering Others), is very busy planning with his members that each one will bring a crippled child or a lonely child to the opening performance. It's nice to consider others, isn't it? What fun it is to visit the various performers in their trailer homes and to hear about their many adventures as the

circus covers the countryside. And how wonderful to pat all the animals!

After waving fond farewells to Captain Caranza, to his clever circus performers and their captivating animals, I said to Sammy, "You were so busy taking care of those children and helping all your C.O.



Club members to gather them up for the circus shows that there was not time on your birthday to plan your usual party this March. My plans, too, went astray because I had hoped to order a special birthday cake for you.

"So often I've seen you gaze with

admiration at the birthday cakes in Polly's Pastry Shop window. Each is decorated and each has a name on the top in letters of sparkling red icing.

"So yesterday I ordered one for you. Will you stop and pick it up after school?"

Sammy was delighted and next day rushed into Polly's Pastry Shop almost shouting, "I came to get the cake with my name on it."

Polly reached into a special glass case and proudly placed the lovely cake on the counter.

To her surprise, Sammy's face clouded over. "Gosh," he said. "The name is green icing and it is sorta in handwriting (script). I wanted big red sort of sparkle letters like printing."

Polly was very understanding. "Can you stop back in half an hour?" she asked. "I'll have the chef redecorate the top and your name will be in big red letters . . . printed."

So Sammy wandered around the village and, right on the dot of one-half hour, burst breathlessly back to the counter. The chef had gone to much trouble to produce a masterpiece . . . with large red letters . . . one that would grace any table.

SAMMY SPIVENS!

"Terrific," exclaimed Sammy.

"We'll pack it very carefully," said Polly, arriving with a box.

"Thanks so much for all your trouble," Sammy said, and off he went to share his beautiful cake with his friends.

May your March be merry, too.

Love,  
Aunt Dorothy

P.S. Columbus the mouse, plus his family, peek under the tent.



13

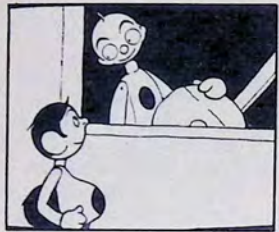
★ Sammy shares his birthday cake with his friends.



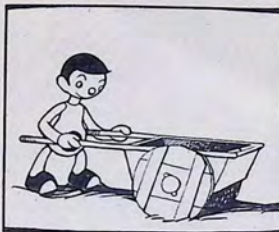


# THE TIMBERTOES

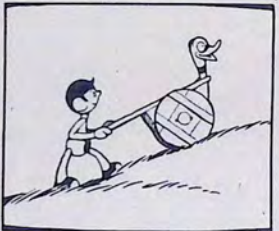
by John Gee



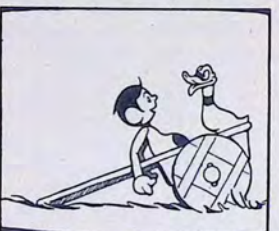
Father T. made a present for Tommy. It was a little wooden wagon.



The duck hopped in for a ride.



Tommy pushed the wagon up the hill. On the hilltop he got in with the duck—and DOWN the hill they came.



Tommy and the duck arrived safely. Mother T. pushed Tommy up the hill. On the hilltop she got in with him.



DOWN the hill they came!



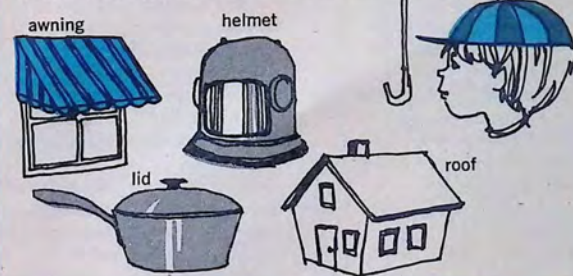
But they did not arrive safely.



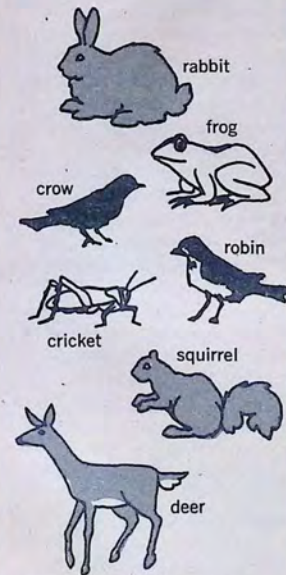
The duck had a good laugh.

## Brainwork

What is the purpose of each of these covers?



Which of these creatures have you seen walking? How does each usually move on the ground?



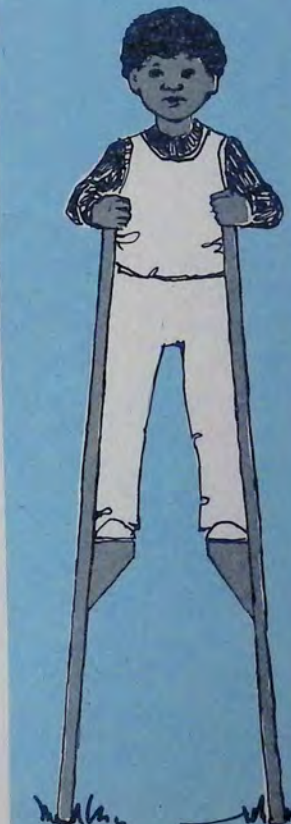
Could this boy on stilts stand still on them?

Could he run as fast on these stilts as he could run without them?

Could he jump with them as well as he could jump without them?

What could this boy do on stilts he could not do without them?

Tell what it would be like if you could not bend your legs at your knees.



## Thinking About Wind

Does the wind always keep blowing in the same direction?

When there is a thunderstorm, does the wind usually blow hardest at the beginning, at the middle, or at the end of this storm?

Did you ever hear the wind whistle?

How may the wind be useful to ships at sea?

Were you ever in a sandstorm?

Is it easier or harder to put out a forest fire when the wind is blowing hard?

Would you rather walk with the wind blowing into your face or against your back?

After a flood why may we be glad if the wind is blowing?

What is a tornado? A hurricane?

Does strong wind make it hard for an airplane to take off or land?

Did you ever see trees which were uprooted by the wind?

Did you ever see destruction by the wind?

★ Features for the child to read and answer from his own head.



# Mystery of the Red Duck

By Bonnie Highsmith

16



In the Norwegian village of Grimstad lived a little girl named Kari who had a white pet duck named Greta. Kari loved Greta more than anything in the world.

Every morning Kari would rush to the wooden-box house on the back porch and say to Greta, "*God Morgen.*" (Good morning.)

Greta would flap her wings and answer, "Quack, quack!"

Always, when Kari looked in Greta's nest she would find a fresh egg for her breakfast.

"*Takk* (thank you), Greta," she would say.

Then she would fill Greta's trough with cracked corn and her tin dish with cool, sweet water from the well.

How Kari loved her duck. And how proud she felt when she walked along the road with Greta quacking at her heels.

"What a pretty duck!" Fru Olsen,

who made jellies, pickles, and pastries for the village market, would exclaim. "What fine cakes her eggs would make."

Kari would only nod and walk on. "*God morgen, Kari,*" Herr Rolig, the actor-clown who performed in the village theater, would greet her. "What a fine act I would have if I owned such a duck. The tricks I could teach her!"

Kari would smile and hurry on her way.

When she passed the big farm at the edge of town, Herr Bonde would come running from the barn. "Ah, Kari, how I envy you! If I had such a duck, what fine ducklings I could raise for market. Please sell her to me."

"Never!" Kari would cry. "Not for all the money in the land."

And once when Kari and Greta strayed too close to the ramshackle cottage where Froken Haksä lived, the old woman sprang out from the bushes. "Someday I shall have that duck," she cackled. "Mark my words. What magic her feet and bill would add to my brew."

Kari snatched up her pet and raced all the way home.

Never would Kari part with her beautiful white duck.

But one morning, when Kari went to the wooden-box house on the porch, she found not a snowy white duck, but a bright red duck.

Her eyes grew wide with wonder. "Greta!" she cried. "What has happened to you?"

Greta quacked sadly and hung her head.

Kari could think of no reason for the sudden change in her pet. Yesterday she was white as a spring cloud; today she was bright red.

An idea popped into her head. "Froken Haksä has done this!" she shouted. "She has cast a magic spell!"

With Greta close behind, Kari ran boldly through the woods into the swampland. She banged furiously on the door of the shack. "Open the door!" she shouted in anger. "Open the door at once!"

Slowly the rusty hinges creaked open and the terrible old woman's face appeared.

"What have you done to Greta?" Kari demanded.

Froken Haksä glanced down at the girl's pet. "Eek!" she shrieked. "A red duck!" She slammed the door in Kari's face. "Take it away! Take it away!"

Puzzled, Kari trudged on to the farm of Herr Bonde. "Please, sir," she said, "can you tell me what has happened to my duck?"

The farmer scratched his head. "This is a great mystery, indeed. Never have I heard of such a thing. I cannot explain it."

Kari traveled sadly on till she came to the house of Herr Rolig. But the clown was no help. "She has stayed too long in the sun," he laughed. "It is only sunburn."

"Perhaps Fru Olsen will know," Kari thought, hurrying to see her.

"Oh, Fru Olsen," Kari blurted when she answered the door at last, "can you help me solve my mystery?"

"Be off with you, girl," Fru Olsen said impatiently. "I have no time for games. Besides, I have a mystery of my own."

"Mystery?" the bewildered girl asked. "What mystery?"

"Feathers in my berry juice, that's what mystery," Fru Olsen yelled angrily. "All day yesterday my children and I worked to pick berries to make jelly for the market. And this morning, what do I find? Feathers in my berry juice. Everyone knows berries do not have feathers!"

Kari swallowed hard and looked



Illustrated by Anthony Rao

about for Greta. But Greta was nowhere to be seen.

Suddenly a loud splashing sound came from the shed beside the cottage.

Kari and Fru Olsen arrived on the scene at the same time. There, splashing and dipping in a large wooden tub of berry juice, was Greta.

Kari was speechless. She could feel her heart pounding in her chest. What would Fru Olsen do to her beloved pet?

But—Fru Olsen was laughing! She was laughing so hard the tears were streaming down her cheeks.

"But—but—" Kari stammered. "You are not angry? You will not harm my pet?"

"Not if you promise to pick me some more berries," Fru Olsen answered. "And don't worry about Greta. In a few weeks she will be as white as ever."

"It's good to have the mystery solved," Kari smiled. "Both of them."



# Claude Monet / 1840-1926

By Marguerite Buranelli

It was getting late as young Claude Monet hurried along the street. He was coming from school and had taken a detour by way of the seafont. He often did that. He liked to watch the ships in the harbor and the sailors going about their work. Sometimes he would just wander along the bank. He'd look out over the water which was always changing. One minute the sea was a stormy greenish-gray. The next minute it was blue—calm and clear.

18 This was Le Havre, a busy seaport on the coast of France. The year was 1857. In those days, sailing ships were still in use. With tall masts and sails blowing in the wind, they came to Le Havre from all over the world.

This day Claude stayed by the water longer than usual. As he walked homeward, the sky was getting dark. The stores were closing for the night. It was almost dinner-time and Claude quickened his pace.

Jogging along, he heard someone call his name. He looked around and saw Mr. Archer in the doorway of his shop.

Mr. Archer was a picture-framer by trade. He also sold pictures. In fact, Claude was one of his artists. The boy was good at drawing and knew how to sketch unusual likenesses of people. His pen-and-ink caricatures were often on display in the shop window.

"Come in, son," the art dealer said to the tall, dark-haired boy. "There's someone here I want you to meet."

Claude frowned. He could guess who it was Mr. Archer meant. It was Eugène Boudin, no doubt. The

dealer often said his two friends should get acquainted.

Boudin was a landscape artist. He lived by himself on the outskirts of the town. He was a quiet sort of person who spent most of his time painting. Claude had seen his pictures. They were silly things, he thought—nothing but sea and sky. No wonder they did not sell well.

Claude wanted to walk on but of course he couldn't. Instead, he followed Mr. Archer into the shop. There stood Eugène Boudin. He was tall and thin. He had stooped shoulders and wore a shabby suit.

"So you're the young man who does those clever caricatures," said Boudin. "I always enjoy seeing them in the window."

"Thank you," said Claude. He turned to leave.

"Your work is good," Boudin continued, "but it would be a pity if you stopped there. You should try your hand at painting."

"I might . . . someday," said Claude. But he didn't think much of the idea. Why should he learn to paint? He was doing fine with his pen-and-ink sketches. At sixteen, he was already making more money than Boudin, who was twice his age.

"You have a gift," said Boudin. "You shouldn't waste it. If you want to paint, I'll be glad to teach you."

"I don't know," said Claude. "I'm very busy these days. I'll have to think about it." Then he said good night and quickly left the shop.

Claude *did* think about it, in spite of himself. On the way home he began to wonder: Should I learn to paint? Should I take lessons from

Boudin? The questions kept buzzing around in his head. Weeks passed and he still didn't know what to do. At last he made up his mind.

On a bright spring day he walked to the edge of town. A path led to the open country and Boudin's simple cottage. He knocked on the door.

That was the turning point of Claude Monet's life. From then on he was a painter. Of course, he didn't learn to paint all at once. Years of hard work lay ahead, but he had taken the first important step.

Boudin was a good teacher. He gave his young pupil sound advice. "You must learn the rules of painting," he said, "but don't be tied to the rules. Work in the way that suits you best. Don't imitate the artists of the past. The world is always changing and art changes, too. It is time now for something new."

Boudin explained what he meant by "something new." He called it "open-air" painting. "Always work out-of-doors," he said. "Remember that in applying colors, light is everything. A haystack on a sunny morning appears gold in color; at dusk it looks brown. It all depends on the light that strikes it."

Claude learned the importance of working quickly. Soon he could finish a picture in a few hours, on the spot. He didn't labor over details. There was good reason for this. When we look at a tree, we don't see each and every leaf. Therefore, in drawing a tree, Claude didn't show each separate leaf. He tried to give a quick impression of the scene.

As time passed, Claude forgot all about the caricatures he used to sketch. He wanted to become a serious artist. Nothing else would do. His parents were surprised by this turn of events. Mr. Monet was a grocer. He had hoped his only son would someday go into business with him. That wasn't going to happen and he tried to understand.

When Claude was nineteen, he decided to leave Le Havre. He planned to work and study in Paris. Boudin came to the train station to say good-bye. As they shook hands, Claude knew he would miss his former teacher. But he would never forget their lessons together.

In Paris, Claude met other young painters. They, too, were interested in new styles and methods. Most of them were poor and unknown.

Their pictures didn't sell. "Too different," people said. "Careless and unfinished," they jeered.

No one understood this new movement. The artists were laughed at and scorned. This brought the little group closer together. They became good friends and helped each other as much as possible. They were all working toward the same goal—to have their pictures accepted by the public.

In April of 1874, the group decided to hold an exhibition. They borrowed a friend's studio. The public was invited. Claude Monet had five pictures on display. One canvas was called "Impression: Sunrise." That picture gave the movement its name. A newspaperman attended the showing and wrote about it the next day. He

didn't like the exhibition. He made fun of the artists. "These Impressionists!" he scoffed.

The name took hold. It was really a good choice. It described exactly what Monet and his followers were trying to do.

In time people began to understand the Impressionists. Their work became popular. Soon it was in great demand. Today many Impressionist paintings are valuable art treasures. One can see them in important art museums all over the world.

Claude Monet became a legend in his own lifetime. He died in 1926 at the age of eighty-six. He was revered as the guiding light of a great movement. Some of his finest paintings are of water lilies. One of them is shown here.

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"Waterlilies"  
The Cleveland Museum of Art  
Purchased from the John L. Severance Fund



# The First True Bicycle

By Ruth Dana Pedersen  
Illustrated by Anthony Rao



20

All his neighbors laughed at him. Even the children gathered around the little cottage, hoping to get a glimpse of Mr. Kirkpatrick Macmillan. People tried to peek into the old shed he used as a workshop. There was a suspicion that something odd was going on in there.

The story of his folly spread to Dumfries, the nearest town. Soon the townspeople, too, came to gape and laugh. There were many wild tales told about the daft Scotsman.

Mr. Macmillan was a simple, honest, country blacksmith. If he noticed the unkind jeers of his neighbors, he gave no sign. He had an idea for an invention and he kept working on it every spare minute.

This was in 1830. There had never been an invention quite like his. The inventor had to plan and then make all the parts by hand. It was a slow process.

Sometimes, at dusk, his neighbors would glimpse a queer sight. The inventor would bring the contraption outside, push to start it, then jump on and begin working furiously. What a rumbling and squeaking! What a dizzy ride! It seemed impossible to steer the thing as it bounced along, but the rider hung on. Sometimes it dumped him in a heap. How the spectators laughed then!

His smithy became a popular

place. More people brought their horses to be shod and carts to be repaired. Some ordered hinges and keys. They all hoped to get a glimpse of the foolish invention. Later, whenever there was a gathering, they told tall tales about the inventor.

His family were so embarrassed and unhappy that they hated to venture outside their cottage. The children dreaded school.

Mr. Macmillan should have welcomed the new customers. He needed the extra money. But he had less time for his invention. He was so impatient to finish it that he took to getting up earlier mornings and working later evenings. He rode his invention after dark.

Consequently, children were allowed to play outside longer in the evenings. Housewives gathered nearby to gossip. On moonlit nights, people took strolls in the vicinity. Everyone hoped to see what was going on.

The story spread that the machine had a wooden frame and large wooden wheels bound in iron. No one knew what made it go. But many had seen it, with Mr. Macmillan astride, careening over his rocky yard.

At last, one day in 1839, his invention was complete.

His family went timidly to view

the monster. It had two cumbersome wheels, a wide flat seat, and a mechanism to make it go. In front was a small horse's head, a remarkable likeness made of oak. None of his family was brave enough to take a ride, and this disappointed the man.

When he told them of his plans, his wife cried and his children were fearful. He intended to ride to the city of Glasgow, 70 miles away, to visit his brothers.

The roads in those days were only stony, bumpy trails. Scarcely any vehicle except the mail coaches attempted such trips. No one traveled unless he had to. Glasgow seemed a world away.

Mr. Macmillan started at dawn. His good wife wept when he left, but it was so dark he was soon out of sight.

He had to struggle furiously. It was a hard job and sometimes he had to pause to rest. It bounced and clattered so loudly that people woke and peered out their windows in disbelief. A cart without an animal to pull it!

But something went wrong. A wheel fell apart. He had to hire a boy to help him carry the parts home. His neighbors all guffawed at his unhappy return.

His wife now hoped that he would forget the project. But Mr. Macmillan wasn't a man to give up. He wasn't even discouraged. He was only impatient that his business kept him so busy that he had little time for his invention.

He kept on experimenting. He made and perfected new parts. Then when they proved unwieldy, he made changes. Months, then years went by before he had completed the vehicle to his satisfaction. It was now equipped with a brake.

One day in 1842, he decided he was ready to take that trip to Glasgow. This time he decided to start in the evening. He hoped to avoid some of the curious spectators.

But somehow the news spread. There was quite a gathering to see him off that pleasant June evening. He was in high spirits when he left his smithy to begin the strange, long trip.

He sat on a hard, flat seat above two high wooden wheels. Ahead of him was the carved horse's head.

The contraption rattled and creaked as it bumped along. Its inventor labored furiously with tireless determination to keep it in motion.

Some of the spectators were awed. Most of them considered it a joke and its inventor daft. The braver children followed him, shouting, "Crazy Mack, get a horse!"

He rode on, determined to succeed. It was a strenuous ride. In rocky regions the wheels wobbled wildly, and he was often forced to dismount and push his machine. At such times, people crowded close to examine the thing. But he impatiently pushed ahead.

The first night he stayed with a friend in a village.

The next day he was on his way early. Things went well, and he was in Glasgow about noon.

Here in the city, many people crowded around. In his haste to avoid these groups of the curious, he ran into a child. Although the

child wasn't hurt, he bawled loudly. So some angry men dragged the inventor before a judge.

During the questioning in court, he told the judge that he had come from Dumfries in two days. In fact, he had come from Cummock, 40 miles away, in five hours, this very day.

The judge reprimanded Mr. Macmillan for riding a machine at 8 miles an hour in the city. He said it was dangerous to others. Then he fined the guilty man five shillings.

But the judge and the men at court were curious to see the contraption. So the owner gave them a demonstration. He worked with all his might while he rode rapidly in fancy figures. The judge declared it a most clever machine. In fact, he was so pleased that he refunded the five shillings fine.

The inventor rode proudly home a few days later.

Mr. Macmillan never made any money from his invention. But other inventors, who had seen his machine, improved upon his idea. They made sturdier, faster, lighter machines than his ungainly 57-pound model. These became increasingly popular.

Its inventor is buried beneath a stone dated 1879, which states that he was the inventor of the bicycle. But few of the people all over the world who ride bicycles have ever heard of Kirkpatrick Macmillan.

The inventor, even in his wildest dreams, could never have imagined the modern bicycle, nor have dreamed how popular his invention would become.

Many persons contributed to the invention of our present-day bicycle as it evolved from the hobby horse. But Kirkpatrick Macmillan was the one whose pedals and levers first made it go.

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## ROAN Goes Adventuring

By Kathleen May Weinard

Roan was a little Shetland pony. He shared his home in the barn with Hopscotch the rabbit.

Hopscotch was nestled down nice and warm in his little box. Roan pulled at the strap that fastened him to his stall.

"What are you trying to do?" asked Hopscotch, wiggling his little nose.

"I am going to look for adventure," Roan answered. "I am tired of this barn. I am tired of being tied up. If Muley Cow can go out every morning by herself, so can I."

He stood right up on his short hind legs. He threw himself back. *Crack* went the strap.



"At last I am free to see the world. Would you like to go with me, Hopscotch?" Roan was just a little afraid to start off by himself.

"Oh my, no," Hopscotch answered. "It is nice and warm right here, and I have lots of carrots, too." He settled right back down in his little box and started to nibble on his carrots.

"All right, then, if you are afraid to go, I shall go alone," Roan said.

Hopscotch did not answer. *Crunch, crunch, crunch* went his teeth in the carrots.

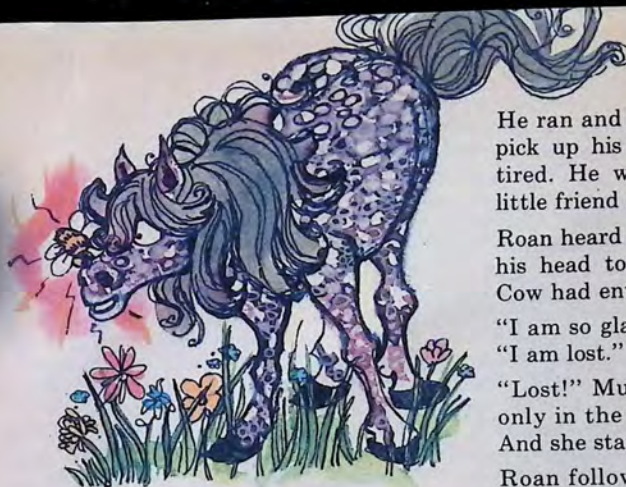


Roan trotted down the little path that led away from the barn. At first it was fun. He kicked up his heels. He hunched up his back and jumped about. He shook his long mane and he swished his tail.

He snapped at a bright yellow thing that flew around his head. The bright yellow thing was a bumblebee. It snapped right back at Roan. It snapped him right on the end of his tender little nose.

Roan jumped and reared backward. His little hooves beat *rat-a-tat-tat* on the hard path as he galloped away. He was so frightened that he did not look where he was going. Finally, he was so tired he could not even run.

"Why did I ever leave the barn?" he thought. He remembered his own stall with hay and a pail of water.



"That is it," he said. "I need a drink of cool water."

Roan lifted his small head and sniffed and sniffed. But not one drop of water could he smell. He turned around to go back home. But he could not find the little path.

"I must have run away from the path when that terrible thing bit my nose," he told himself.

Tired and thirsty, he pushed his way through the sharp twigs and bushes. At last, he came to a clearing. He started to nibble at the new spring grass.

Then a little yellow butterfly flew past Roan's nose. He remembered the other yellow thing that snapped. He turned and ran as fast as his short legs could go.

"That yellow thing is not going to bite my nose again," he said.



He ran and ran until he could scarcely pick up his feet. He was lost. He was tired. He was hungry. He missed his little friend Hopscotch.

Roan heard some twigs snap and turned his head to look behind them. Muley Cow had entered the clearing.

"I am so glad to see you," Roan called. "I am lost."

"Lost!" Muley Cow snorted. "You are only in the pasture back of the barn." And she started up the path.

Roan followed her to the warm barn.

Hopscotch sat up, his pink mouth open, his little whiskers wiggling up and down. "Oh my!" Hopscotch said. "Oh my! Adventuring he would go."

Roan did not answer. He was too happy to be home. He just buried his nose in the new hay and started to eat his supper.





# Science Reporting

## What Should We Do About the Gypsy Moth?

By Jack Myers, Science Editor

About one hundred years ago, some little moths were brought from Europe to Massachusetts to see if they could be used to make silk. They came to be called gypsy moths. Some of them escaped and began to live in the wild as they had back in Europe. Eighty years ago they had become a pest in New England. Today they have become a big problem.

What is bad about the gypsy moth? The adult moths do not feed and do no damage at all. The male moth is dark brown, has a wingspread of about 1½ inches, and is a good flier. The female is a dull white with black wing markings. She cannot fly at all. After mating with a male, the female lays several hundred eggs which spend the winter as a hair-covered mass. The next spring those eggs develop into tiny caterpillars. The caterpillars

keep growing until they may be two inches long. They have big appetites for leaves, especially oak leaves. One of them can chew up five or six leaves in a day. That is what causes the damage. A thousand caterpillars can strip all the leaves off an oak tree.

When it attains full growth, a caterpillar (larva) builds itself a brown case and becomes a pupa resting inside. In about two weeks it has changed into an adult moth coming out of that case.

When there is lots of food, a population of gypsy moths increases in number about ten times each year. If there are 20 this year, there are likely to be 200 next year and 2,000 the following year. It does not take many years for those numbers to get very large. By the time that happens, a whole forest may be stripped of its leaves.

Until recently the gypsy moth lived only in New England and was spreading slowly southward and westward. Now it has even been found a few places in Alabama, Ohio, and Wisconsin. Egg masses and pupa cases get deposited under campers and mobile homes that visit campsites. Now the gypsy moth is hitchhiking across the country.

What shall we do about the gypsy moth? In the past we have sprayed trees with chemicals like DDT to kill

the caterpillars. That also kills other caterpillars and perhaps some of the birds that feed on caterpillars. Is there any way to get rid of the gypsy moth without upsetting the ecology of our forests? Maybe there is. Discovery of a new weapon has been reported in the magazine, *Science*. The report was written by Morton Beroza and E. F. Knipling, two scientists of the U. S. Department of Agriculture. I think you would like to know about the ideas of that article.

Many insects communicate with their own kind by odors. Each species, each special kind of insect, has its own special chemical odor. And that odor is smelled only by its own kind. Because this type of insect behavior is so common, the odor-carrying chemical used by any species has been given a general name. It is called a pheromone.

How does a flying male gypsy moth find a female far away in the dark woods? Maybe the female has the special odor of a pheromone. Scientists found that if just the tip of the female abdomen is cut off, then that part alone will attract males from rather great distances. Scientists learned to make traps baited with abdomen tips cut from females. The traps became useful in finding out where gypsy moths are located.

You may already have thought about what it was that scientists really wanted to know. What is the special chemical pheromone that a male moth can smell, sometimes from almost a mile away? Discovering that chemical was not easy. The trouble was that no female moth ever makes very much of it. The job was to find a very tiny amount of one special chemical among hundreds of other chemicals in the tip of the abdomen. Finally, in 1969, the discovery was made. Chemists found what that pheromone was and proved it by making some. The full name for the chemical is *cis-7, 8-epoxy-2-methyloctadecane*. The chemical's nickname is disparlure.

What good is disparlure? Well, first of all, we can use it in traps to find out about male gypsy moths. Even one millionth of an ounce is much better than a female moth for attracting males.

To find out about traps and how they work, I phoned the nearest office of the Animal and Plant Health Inspection Service. One of their men, Mr. John Sporer, was kind enough to bring a trap to our editorial office and show us how it worked. Not all traps are exactly alike but they all use the same idea. His trap was made out of a paper cup and a lid with a round one-inch hole in it. The inside of the cup was

smear with the sticky goo used on flypaper. And stuck on the inside was a wad of cotton that had a little bit of disparlure.

There was nothing in that trap that any of us could smell. But before John could tack it up on one of our trees, a male gypsy moth came fluttering around and went in through the hole in the lid. I learned a lot in a hurry. I had never really noticed a gypsy moth before. I learned that we have lots of them right here around the editorial office in Honesdale, Pennsylvania. We caught twelve gypsy moths the first day—but not one of any other kind of insect.

So far disparlure has been used in traps to find out where gypsy moths are starting to live. In 1972, the moths had spread through the eastern parts of New York and Pennsylvania, through New Jersey, and into northern Maryland.

Can we use disparlure to control the gypsy moth? Scientists have thought of two possible ways. One way is to put a whole lot of traps in some newly infested area, maybe 5,000 traps per square mile dropped from planes. Traps can be made for about two cents each. This will be expensive, though not as expensive as spraying with chemicals to poison the caterpillars.

Another way has been called the

"confusion" method. Suppose we dropped from a plane thousands of little pieces of paper or string, each soaked in a tiny bit of disparlure. Then the males would smell disparlure everywhere and might be so confused they would seldom be able to find females.

How well disparlure will work in really controlling the gypsy moth is not yet known. Experiments are going on to find out and to make sure that disparlure is not a poison for any other animal or plant. Disparlure has become a model for the idea of learning how we may be able to control just one kind of insect by using its special pheromone. We learn about it by first studying all about the life of the gypsy moth.

Even if it does everything that we hope, should we use disparlure? I think there will be some arguments about this question. Can we use it without upsetting our ecology? The gypsy moth came to us from Europe and right now it is upsetting our ecology. There has not been time for it to develop natural enemies which usually help to keep balance in nature. Maybe we should just wait a few hundred more years for that to happen. I doubt that we will be that patient. Rightly or wrongly, we are likely to decide that we like oak trees better than gypsy moths.

A trap like the one we used.



Caterpillars have huge appetites for leaves.



Female gypsy moth and eggs.



A male gypsy moth.







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## One Sister Too Many

By C. E. Petri  
Illustrated by Lois Axeman

Greg had been told that soon he would have a brother or sister. He already had two older brothers and one older sister. He didn't need any more. He didn't like the idea at all. There were enough kids in the family. Why did they have to have more?

Then one day Mother went to the hospital. She wasn't home to play with him or to help him get dressed or fix his breakfast when he got up. Greg was very unhappy.

He was still unhappy when Daddy brought Mother home with his new sister. There was a lot of noise and rushing around when they got home. Mother was still tired and went right to bed. She didn't even kiss him as she

usually did. "Maybe she doesn't even like me anymore," thought Greg.

He watched everybody fuss around with the baby. They went to her every time she cried. They didn't run to him when he cried. He looked in at her. "I don't see anything nice about her," Greg said to himself. "She cries too much."

The next day Mother sat in the living room and read stories to him just as she used to. The baby was sleeping in her basket by the couch, and Mother kept looking at her every once in a while.

"Let's give her away, Mom," said Greg. He was sure Mother would get mad, and he was sorry he said it.

"Whom should we give her to?" asked Mother.

Greg was surprised. She didn't get



mad after all. "Let's give her to Aunt Jane," he said. "She doesn't have any children, and she will take care of her."

"We'll ask her when she comes to visit," said Mother.

So Greg waited. He didn't mind sharing his mother now. It wouldn't be for very long. He helped bring baby Sue's diapers, and he warmed up her bottle. Greg wasn't the baby anymore. He was a big boy now.

A month passed and Aunt Jane didn't come. Greg still helped with the baby. She really wasn't much trouble. She cried a lot but she slept most of the time, and now Mother had time to play with him. One day Sue even smiled at him as he handed her a rattle.

"Look, Mother, she likes me. She smiled at me," Greg said happily.



Mother smiled and nodded.

One day Greg said to Mother, "Let's take Sue with us."

"Where are we going?" asked Mother.

"I mean if we ever move," replied Greg.

"Oh! Why should we take her with us?" teased Mother.

"I like her now," said Greg as he gave the baby a kiss. "She likes to play with me, too."

27

## Fun With Phonics

### Calendar Quiz

How many syllables are there in the word *calendar*? Give yourself that number of points.

All the days of the week have two syllables in their names, except one. Which one is that, and how many syllables does it have? Give yourself that number of points.

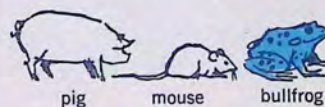
Look at the groups of months below. Two of the groups have the same total number of syllables. Give yourself that number of points.

|          |       |           |          |
|----------|-------|-----------|----------|
| January  | April | July      | October  |
| February | May   | August    | November |
| March    | June  | September | December |

Add up all your points. Perfect score is 15.

### Sounds Around Us

In each group, which two can sound most alike?



pig

mouse

bullfrog



drum

whistle

violin



harp

lion

cello

### Spelled Alike—Sound Different

In each sentence below, the underlined words are pronounced differently, although they look the same.

Does the child who tears a book shed tears?

Must you be close to a door in order to close it?

Holding the bow of her violin, she made a bow to the audience.

Does it surprise you to see two does together?

I cannot use this machine; I have no use for it.

Please record the information in a record book.

Do you like to sing do re mi?

I put the dove into its nest and dove into the pool.

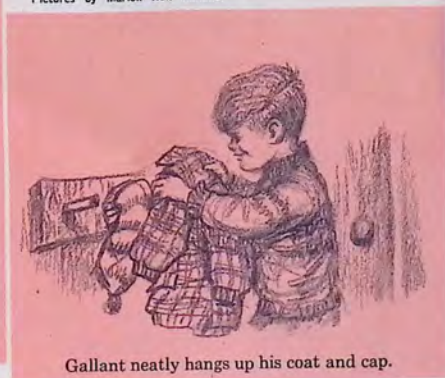


# Goofus and Gallant

By Garry Cleveland Myers  
Pictures by Marion Hull Hammel



Goofus leaves his coat and cap on the chair.



Gallant neatly hangs up his coat and cap.

28



"Mother, clean up the water I spilled."



Gallant himself cleans up what he spills.



Goofus sweeps things under the bed.



Gallant brushes up litter.

★ Proper behavior is learned by seeing the two extremes.

## Life as an Astronomer

by Donald H. Menzel

Professor and former Director, Harvard College Observatory  
and Senior Scientist, Smithsonian Astrophysical Observatory

Dear Dr. Menzel:

I want to be an astronomer. I like your book, *Astronomy*, very much. Could you answer some questions for me? Do you like your job? How did you prepare, and what personal qualities does it take? When and how did you become interested in astronomy? Also, would you tell me where you work and what you do?

Richard Worssam  
Reston, Va.

I am very glad you are interested in astronomy and that you like my book on the subject. I shall try to answer your questions.

Yes, indeed, I do like my job very much. I have been an astronomer for more than fifty years and I still enjoy every minute of it. I have spent long nights at the telescope, looking through the instrument and making photographs.

I went to college and spent one year in graduate school obtaining a Master's degree. Then I went to Princeton where I studied for another three years, and finally received my Ph.D. However, I have learned that going to school is only part of learning. I am still learning things every day about astronomy. Not a day passes that I don't read some works on astronomy, papers that were written by other astronomers.

To be an astronomer, I think hard work, above all, is important. If you work hard you can learn the things you need to know to be a good astronomer.

When and how did I become interested in astronomy? That is a good question. In 1918, there was a total eclipse of the sun in Colorado. And I suddenly realized I didn't know very much about the stars and planets. I began to read and pretty soon I was taking courses in the University. Finally I decided

to be an astronomer. Until then I had planned to be a chemist.

Now I have an office at Harvard Observatory. It is in a building that I myself designed eighteen years ago and I like my office very much. There are books all around in the bookcases. I have a big blackboard at one end where I solve certain problems. I have two maps on the wall, one for the total eclipse of the sun in Canada that occurred on July 10, 1972, and another for the eclipse of June 30, 1973, in the Sahara Desert.

I work very long hours. Today, for example, I have worked continuously since 7 a.m. It is now 6 p.m. and will be past six by the time I get home. On my recent trip to South Africa and Europe, I kept even longer hours. But I don't have to work as long or as hard as I do. I just like to do it.

I do all sorts of things now. I love to do mathematics, solve complicated equations, and work in the field of physics. I study atoms. I study the spectra of stars and various other objects. I look at photographs. I observe eclipses of the

sun. I've built several observatories around the world. I travel a great deal and lecture many times. I speak Spanish and have given a number of lectures in Spain, Mexico, and South America. I never count the hours, but I suppose I work at least 60 and often 80 hours a week. But I have a wonderful time and I think it is usually more like play than work.

I have written lots of scientific papers. I have, I believe, written 29 books. I like to paint, I play the organ, I play the guitar, I enjoy ballroom dancing, and I like to fish.

I certainly recommend astronomy as a good occupation. There is still a need for astronomers. Some are teaching in schools. Some are research astronomers at big observatories. Others are working for the government and some are working for industry. As you continue your study of astronomy, you can decide what type of job suits you best.

I hope you will become an astronomer. There is still much to be done. Perhaps you can work in the big Orbiting Observatory that will soon be sent into space.

Dr. Menzel on a Lick Observatory eclipse expedition in 1930.



★ In answer to a child's letter, an eminent scientist tells about his life.

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# A Surprise for ALOYSIUS

By Sydney K. Davis

The Widow Wanda shook the snow off her coat as Aloysius let her in his house.

"Oh, my," she said as she went to stand by the fire. "What a dreary winter afternoon."

"I'm glad you came," Aloysius said, "because I have a noise in my wall and it makes me nervous." He looked over his shoulder at a shadowy corner.

"Oh, you're just imagining things," laughed the Widow.

"No, I'm not," said Aloysius. "Just sit down a minute with me

and be quiet and listen."

Sure enough, after a little while, the scratching began. The Widow laughed. "That's a mouse," she said. "You're going to have a mouse in your house."

"No, I'm not," said Aloysius. "Shoo!" he yelled as he banged on the wall. The noise stopped.

"Oh, don't be mean," said the Widow. "Just suppose you had no place to sleep on this cold afternoon, and wanted to come in this cozy room and rest by the fire."

"I'd wait till I was invited," snarled Aloysius. "That mouse has no manners."

"He just doesn't know any better. Perhaps his mother was so busy trying to feed his brothers and sisters that she didn't have time to teach him any," the Widow said.

"He could learn by himself," Aloysius growled. "Anybody with any sense should know not to go gnawing on somebody else's house. What would you think if I started chewing on the outside of your living room?"

"I'd let you in and bake you some cookies," said the Widow. "Anyway, I came here to talk about something else. Tomorrow afternoon I want you and Samuel to come to my house for a cup of winter tea and gingerbread."

"Winter tea?" screamed Aloysius. "I never heard of such a thing."

"Don't be silly," said the Widow. "It is delicious. It has tea and spice and sugar in it. Let's go and invite Samuel."

Samuel had on his bathrobe, but he let them in. "I've just made a lot of clam chowder," he said, "and there's plenty for all." They sat down in Samuel's kitchen and enjoyed his soup as the afternoon grew darker.

"Aloysius has a mouse in his house," said the Widow.

"I do NOT," said Aloysius. "I only have a mouse TRYING to be in my house."

"Where's your hospitality?" laughed Samuel. "Didn't you invite him in?"

"I'm tired of both of you," said Aloysius as he walked out, banged the door, and went home.

His house was quiet. The fire had died down. He went to bed but couldn't sleep. He was thinking of what the Widow had said about a cold winter night and a little mouse only trying to keep warm. Aloysius

got up. He went to his front door and opened it. The air was cold and damp.

"Mouse," he screamed, "mouse, come on in."

Samuel heard the noise. He and the Widow went to his front door. "Be quiet!" they yelled. "You are disturbing the neighborhood."

"Oh dear," the Widow said to Samuel as they closed the door. "Aloysius is just trying to be nice to the mouse. Let's go tell him we are sorry we yelled at him, and remind him to come to tea tomorrow and wear his best coat and hat."

"My word," said Aloysius when they left. "Such a fuss over a mouse and a cup of tea!"

The next afternoon at teatime, it was snowing hard. Aloysius got dressed in his best coat and shirt, and started looking for his hat. He couldn't find it. He went into his living room. There was a hole in the wall in the shadowy corner. His hat

was upside down on the floor. In his hat, there was a mother mouse and her babies. Aloysius grabbed a picture off the wall and put it over the hat.

"I'll take them to the Widow Wanda, and she will bake them cookies," he said.

"Look," he said when she let him in. "I've brought you some pets."

"Eeeek!" screamed the Widow as she ran out of the house.

"Eeeek!" said Samuel as he looked. "It's a mouse in your hat." He ran outside with the Widow.

Aloysius put his hat down by the fire. The mother mouse ran off to calm her nerves. Aloysius poured a cup of tea and went to the front door.

"You'd better come in and join your party," he called to the Widow and Samuel. "It's a funny thing for me to have to use MY hospitality in YOUR house," he said as he reached for the gingerbread.



Illustrated by Jerome Weisman

## Matching Mexican Baskets

Look at each basket at the left. Find a basket like it at the right.







## Daniel Hale Williams—Courageous Surgeon

By Ann M. Mayer

Dr. Williams bent anxiously over the injured man on the operating table. Mr. Cornish had been stabbed in the chest. His wound appeared to be serious. Had his heart been injured? Dr. Williams had no way of knowing, for there were no X-ray machines in 1893. The only way to find out was to open his chest. This operation was almost unheard of in the days before blood transfusions and antibiotics. No one was certain what would happen.

But Dr. Williams knew he must risk an operation. Swiftly and boldly he cut into the man's chest. He discovered a cut blood vessel and a hole in the sac which surrounds the heart. Fortunately, the heart itself was not badly damaged and would probably heal safely. He believed the hole in the sac had to be stitched. Six doctors watched with amazement as Dr. Williams skillfully performed this difficult task.

Each heartbeat made the tissue jump beneath his fingers.

Mr. Cornish made an excellent recovery and left the hospital 51 days later. Dr. Daniel Williams was the first man to operate successfully on the human heart. This history-making operation earned him distinction.

When Dan was young, his father once said, "We colored people must cultivate the mind." These words made a lasting impression on Dan. He was only eleven when his father died. From that time on, he received little help from his family. But he steadily pursued his goal of getting a good education.

To earn money, he worked part-time as a barber in Janesville, Wisconsin. The barber-shop was like a school. Many well-educated men came to the shop, and Dan listened eagerly to their discussions. He made friends with many of the townspeople including the doctor.

When Dan finished high school, he became Dr. Palmer's apprentice. Then he went on to Chicago Medical College, which was among the best medical schools in the country. Dan had to borrow money to finish college, but he was determined not to drop out.

In 1883, he earned his M.D. and set up practice in Chicago. His skill and kind, sympathetic manner brought him many patients.

Dr. Williams soon discovered that Negro patients were not welcome in white hospitals. Negro doctors could not get positions on hospital staffs, and nurses' training schools would not admit Negroes.

Feeling this was unjust, Dr. Williams decided to start his own hospital. In 1891, Provident Hospital opened its doors to black as well as white patients. Both black and white doctors served on the staff. Dr. Williams also began a training program at Provident for Negro

nurses. Training programs in other cities were modeled after this one.

Dr. Williams made Provident Hospital one of the best in the country. He accepted only well-qualified nurses and doctors. He was very strict and expected everyone to work hard. His message was, "You cannot sit back and wait for things to happen. You must go out and work for changes."

In 1893, Dr. Williams was appointed chief surgeon of Freedmen's Hospital. This was the government hospital for Negroes in Washington, D. C. When Dr. Williams arrived, he was shocked by the conditions in the hospital. The buildings were ancient and run-down. The heating was poor, and patients were neglected. The women in charge of the patients had no training at all.

Immediately Dr. Williams began to improve the hospital. He started a nurses' training course and a program for interns. Negro doctors were welcomed and given a chance to advance. He started an ambulance service, with a horse and

wagon ready at all times.

At the end of a year the hospital was well organized. Dr. Williams remained at Freedmen's for five years, then returned to Chicago.

Negro doctors all over the United States were calling on him for help. He inspired many of them to start hospitals. At that time there were very few Negro surgeons in the United States. Good training programs were scarce, so Negroes came from all parts of the country to study with Dr. Williams. When the American College of Surgeons was organized he was one of the founding members.

Fame never made Dr. Williams wealthy. Many of his patients were poor, and he charged them little or nothing for his services. People always felt free to come to him with their troubles.

Dr. Williams encouraged Negro doctors and nurses to strive for excellence. His skill, intelligence, sympathy, and dignity made him one of America's greatest physicians.



Illustrated by Tom Dunnington

## Jokes

Selected by Children  
Seven to Twelve Years of Age

Boy to Clerk: "Give me a mouse trap and hurry, please. I have to catch a bus."

Clerk: "This is the biggest trap we have but I'm sure it won't catch a bus."

Janice Johnson—Texas

Timmy: "May I have a dime for the crying man outside?"

Mother: "What crying man?"

Timmy: "The man who is crying, 'Ice cream, ice cream.'"

John Essay—Nebraska

Dick: "I haven't slept for ten days."

Tom: "Aren't you tired?"

Dick: "No, I sleep nights."

Debra Kaplan—Pennsylvania

Dad: "I'm spanking you because I love you."

Johnny: "I wish I was big enough to return your love."

Pamela Smith—Massachusetts

Jane: "Water attracts electricity."

Teacher: "What tests have you made to prove this?"

Jane: "Every time I'm in the bathtub the phone rings."

Lloyd Houghton—New York

A man was taking a grandfather clock to a jeweler's shop for repairs. On his way through a crowded street, he accidentally bumped into a lady, knocking several packages from her arms.

"Why can't you be like other people," bellowed the lady, "and just wear a watch?"

Brenda Collins—Iowa

Send us the funniest joke or the best riddle you ever heard, with your name, age, and home address. If we think it good enough, we might print it in HIGHLIGHTS. Mail to Highlights for Children, Honesdale, Pa. 18431



# Origins of the Pianoforte

By Julian Cavalier

A piano recital given by a famous pianist is an exciting event. The large, black, grand piano waits silently on the stage. The concert hall is filled with music lovers, who applaud with enthusiasm as the pianist makes his appearance. He bows and sits at the piano. The applause fades to breathless silence, and he begins to play. The beautifully combined rhythms of the music are loud and soft, giving the listener great pleasure.

The origins of stringed musical instruments are lost in the depths of the past. The pianoforte, or piano as it is now commonly called, has been a feature of civilized home life for many decades. Harps have been known for about four thousand years, perhaps longer. The primary ancestor of the pianoforte is the monochord, or single stringed instrument, first devised by the Greek

philosopher Pythagoras over 2,000 years ago. It is with this crude instrument that he discovered the laws that govern the pitch of musical sounds.

During the period of the Roman Empire, the first pipe organ, called a hydraulikon, was conceived. It was later improved with the addition of keys to allow wind into the pipes. Keys released or "unlocked" the sound, thus came the name, "clavis" or "key."

It was not until the 13th century, after the Dark Ages passed, that the monochord of Pythagoras was improved. A sound board was added, more strings, and keys fitted to a shallow box structure resulted in a new musical instrument called the clavichord. This delightful little instrument, though delicate and feeble in tone, had the essentials of control of loudness by the touch of

its keys. In its own gentle way, the clavichord was a favorite of composers and music lovers for several centuries.

From very early times another stringed instrument, known as the psaltery or psalterion, as the Greeks called it, had been in common use. It was a small, portable instrument being a board with strings stretched over it, and played by a little hook curled over one finger. It was a sort of ancestor of the mandolin and guitar. Though a simple instrument, the psaltery is important because it was the foundation upon which was built the most famous of all old keyed instruments, the harpsichord, and the smaller spinet. The main difference between the harpsichord and the clavichord is that the keys of the harpsichord were adapted to pluck the strings rather than to strike them as did the clavichord.

The harpsichord was simply a highly developed spinet. All spinets had only one wire to each note or tone. Spinets were a favorite instrument of cultured families whose members were expected to either play it or sing, or both. The harpsichord, however, was the supreme development of plucked stringed instruments, having two or three strings to a note.

Despite the beauty and pleasures of the harpsichord, it had its major defects in the plucking mechanism. The weaker little clavichord with its pairs of strings for each note and striking keys was far superior in this respect. By 1781, the pianoforte was well known and sounded the doom of the harpsichord.

At the beginning of the 18th century in Dresden, a man named Pantaleon Hebenstreit constructed

a large instrument with two hundred strings which were struck by heavy, felt-covered mallets. He called the instrument a dulcimer; but his German neighbors gave it the name *hackbrett*, which means "chopping board," because of its shape and the manner of playing it. Hebenstreit took the instrument on a tour. He played in France before King Louis XIV, and in Germany and Italy. In the year 1705 he gave a concert in Florence, Italy, and was a success with his amazing instrument.

One of his listeners in Italy was a musician-mechanic, harpsichordist, and harpsichord-maker named Bartolommeo Christofori. On the night Christofori heard Hebenstreit's concert, he conceived the idea of applying the felt mallets of Hebenstreit's instrument to the keys of the harpsichord. Thus was born the idea of a new type of harpsichord with hammer action. Christofori developed such an instrument in the year 1706, about a year after hearing Hebenstreit's concert. By the year 1711, Christofori was already at work on

another improved device he called *clavicembalo col piano e forte* or "keyed harpsichord with soft and loud effects." This then was the beginning of the pianoforte, which means "soft-loud."

As the years passed, Christofori continued to improve the pianoforte in all its features. His genius brought forth the instrument which served a great dynasty of famous composers and millions of music lovers.

Since Christofori's time, the history of the pianoforte has been one of constant change and improvement by other men of remarkable talents. A great line of craftsmen from various countries each added their ideas which improved designs, materials, and construction that made possible the piano as we know it today.

Since the pianoforte was conceived by Christofori over two hundred and fifty years ago, his invention has been considered the universal musical instrument that has brought happiness to people of all ages around the world.



Dulcimer



Harpsichord



Clavichord

## A Tall Tale

A city man bought a beautiful horse from a farmer.

"That's a wonderful horse," said the farmer. "I hate to part with him."

Proudly the new owner mounted the horse to ride him away. But instead of going out to the main road, the horse backed around the house and sat down on a crate of eggs.

The farmer was embarrassed. "I forgot to explain to you," he said, "that this horse has one little bad habit. He sits on eggs."

The city man was surprised but still he was proud of the horse. He

mounted again, and the horse trotted with him at a good pace down the road. The rider began patting the horse and talking to himself about his wonderful purchase, until he came to a bridge over a small stream. The horse stopped and looked up and down the stream. The rider urged him to go on. The horse moved to the middle of the bridge, turned to the right, jumped over the railing of the bridge, and sat down in the water.

The city man, very wet and angry, led the horse back to the farmer.

"What has happened?" asked the farmer.

"Happened!" replied the city man. "You told me this horse sits on eggs but you didn't tell me he would throw me into a stream of water."

"Tut, tut!" answered the farmer. "I felt, as I thought about it, that there was something more I meant to explain to you. I forgot to tell you he sits on fish, too."





# Our Own Pages



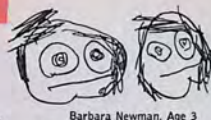
Vicki Jo Francis, Age 4  
Austin, Texas



Michael Huber, Age 10  
Allentown, Pa.



My Kite  
Fish  
Michelle Nesvold, Age 2  
Grinnell, Iowa

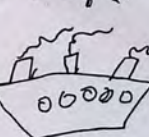
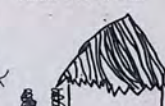


Barbara Newman, Age 3  
Garden City, N.Y.



Debi Dowd, Age 8  
Rancho Cordova, Calif.

Janna Hendren, Age 4  
Albuquerque, N.M.



Mark Plourde, Age 6  
Hartford, Conn.



Tim Otto, Age 5  
Kampala, Uganda, East Africa



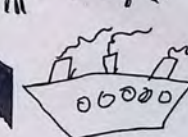
Robert Sheedy, Age 7  
Canyon City, Ore.



David Cureton, Age 11  
Keene, Ontario, Canada



Catherine Bushman, Age 8  
Needham, Mass.



Mark Plourde, Age 6  
Hartford, Conn.



Tim Otto, Age 5  
Kampala, Uganda, East Africa

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## Rhymes

Rhymes, rhymes,  
Are always in time.  
Always and forever,  
The end is now or never.

Like eight, nine,  
Where's the twine?  
Or, tick, tock,  
Goes the clock.

Or like mish, squish,  
Eat a fish.  
Or a witch  
Fell in a ditch.

Oh, there are many kinds of rhymes.  
Yes, the truth might bend,  
But a rhyme is a rhyme.  
And that is my end.

Robby Cunningham, Age 10  
Tallahassee, Fla.

## The Sea

The wonderful sea is a beautiful  
place,  
Where starfish and seashells are  
found,  
And all of the people that come to  
the sea  
Admire the beautiful sound.

Linda Ridge, Age 8  
Seattle, Wash.

## An Old House Cat

An old house cat,  
Chasing a rat.  
Catch a few,  
Lose a few.  
I wish there were more things  
They could do.

Charles DeYoung, Age 9  
Seattle, Wash.

## A Smile

There's nothing quite as beautiful  
as a smile.  
Why, it makes my whole day  
To see a cheerful person  
As I go past on my way.  
If a picture's worth a thousand  
words,  
A smile is worth a million.  
A grin is worth a billion words,  
A laugh is worth a trillion.

Cathy Shermer, Age 11  
Winston-Salem, N. C.

## The Wind

O wind that makes the branches  
sway,  
That causes the waves to rock and  
roll,  
That bends the flowers,  
And scatters the clouds,  
That makes the leaves go fluttering  
by,  
whistling through the treetops  
Causing birds to flee and hide.

Colleen Cooper, Age 13  
Columbus, Ohio

## The Shamrock

Once upon a time  
There was a plant—all green.  
It had three hearts,  
And it had a stem.  
On St. Patrick's Day,  
Mommy told me what it was.  
It was a shamrock!

Christopher Burn, Age 6  
Mountain Lakes, N.J.

When you send a picture or a poem or a story  
for "Our Own Pages," remember to include:

- (1) your name
- (2) address
- (3) age
- (4) a note from your parent or teacher,  
saying the work is your very own (original).

Drawings should be done in black on white paper.

SEND TO: Highlights for Children, Honesdale, Pa. 18431

# Letters to the Editor

In a recent issue there was a  
letter saying the writer was afraid  
to ask questions in front of the class.

I learned that if you need to know  
something you should speak up.  
Because if you don't you might not  
learn something you really want  
to know, and it might be important.

So in my opinion the student  
should speak up!

Cathy Weber  
Merrick, N.Y.

The answer you suggested to the girl  
who was afraid to ask questions in front  
of the class is a good one.

Best wishes to you, Cathy.

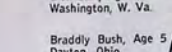
—The Editor



Lisa Earl, Age 3  
Washington, W. Va.



Debbie Besta, Age 9  
Valley, Neb.



Braddy Bush, Age 5  
Dayton, Ohio



Greg Hoover, Age 12  
Howell, Mich.

## I Go to School

I go to school,  
The sun is out.  
Are you awake?  
Are you about?

Dana Rowe, Age 6  
Waycross, Ga.

## My Dog and I

I love a little dog  
That lives in my house.  
She wags her tail,  
And her name is Scally.  
She lives in a little white house.  
She sniffs at everything,  
And she barks at everything.  
Her eyes glow and turn colors,  
And she is black and white.

Jaidene Williams  
Brigham, Utah

You and your mother did exactly the  
right thing. Whenever there is an am-  
bulance or fire engine coming down a  
street, the correct thing is to pull over  
and then let it pass. In some places you  
are required to do this by law, but  
whether or not you have to do it, it is  
still a considerate thing to do.

—The Editor

## My Kite

March is the month for flying my  
kite.  
March is the month for flying my  
kite.  
Oh, how I love to see it in flight.  
It has a long string, and it has  
a long tail.  
Into the wind it likes to sail,  
Way up high and out of sight.  
I tug at the string with all of  
my might.  
It dips and dives close to the  
ground.  
My kite gives me more fun than I've  
ever found.

John St. George, Age 9  
Bowmansville, N.Y.

mean toward brothers and sisters who  
seem to get more than we do and are al-  
lowed more privileges than we have.  
When we feel mean, we are likely to do  
mean things—then we look not for the  
good in other persons but for all the mis-  
takes they make.

When we try to understand a person,  
try to overlook little mistakes, try to  
tell them of the things we honestly like  
in them, we help everybody to feel better.

When you can't get along with a sister  
or brother, try to find out where you are  
at fault, what you can do to make the  
whole family happier. I'm sure then you  
will have a better time. This is not easy,  
but worth working at.

—The Editor

Please tell me how Goofus learned  
such bad manners.

John Arwood  
Forrest City, Ark.

I don't think anybody needs to learn  
bad manners. They just have them un-  
less they learn good manners. We don't  
have to try to have bad manners, but  
you may have to try hard to learn good  
manners.

—The Editor

I would like to become a doctor  
when I grow up. Please send me any  
information I should know before  
becoming one.

Debby Rosenberg  
Winnetka, Ill.

For a girl of nine to set the goal of  
becoming a doctor is very good. It would  
seem to mean that you want to be very  
useful in this world.

At this time in your school life, you  
will need to work hard in all your sub-  
jects. You will want to become a good  
reader so that you can read all the books  
you will need to use.

Perhaps you could talk to some phy-  
sician about the life of a doctor.

—The Editor

I want to tell you how much I  
like HIGHLIGHTS. One time I was at  
our school library and I forgot to  
bring my books. So I read one of  
your HIGHLIGHTS books. I decided  
to take two of them and I liked  
them a lot! Next time I think I'll  
take another one out!

Ray Pietryla  
Lyons, Ill.

I am glad that your school library has  
copies of HIGHLIGHTS. Perhaps someday  
you can save your money and subscribe  
so that you will have copies at home.

—The Editor

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# The Sound Detectives

By Joann Temple Dennett

We live in a very noisy world. Airplanes warm up their engines to a high-pitched whine before taking off with a huge roar. Garbage trucks gnash and grind their way along city streets. Radios play, car horns honk, dogs bark.

Nature, too, makes noise—thunder, howling winds, severe storms, and tornadoes make a great deal of noise. In fact, thunder can be noisier than a boiler factory or a subway train roaring by.

The range of noise that we can hear is huge. Our ears will hear a level of energy comparable to that sent out by a 50-watt light bulb 400 miles away. Obviously, you can't see a light bulb 400 miles away from you. You might be able to see the flicker of light from the bulb if it were high enough but this same tiny amount of energy seen from a light bulb 400 miles away is about the same amount of energy in the quietest sound your ears can hear.

Sound travels as waves in the atmosphere. Something making a noise actually disturbs the air around it and sends out waves of compressed portions of air. Between each compression is an area of less closely packed air, or a rarefaction.

For all kinds of waves, frequency

is described by the term **hertz**, named after the German physicist Heinrich Hertz who discovered radio waves. If it takes a certain sound one second to make 20 different compressions in its sound wave, scientists describe the sound by saying that it has a frequency of 20 cycles per second, 20 hertz.

When the waves set up by a noisy thing reach your ear, a complex network of bones and nerves transmits the wave to your brain which recognizes the signal as sound. You can hear sound waves with frequencies from 20 to 20,000 hertz. That's a lot of different sounds. Strike the lowest note on a piano. It has a frequency only slightly higher than 20 hertz, the lowest sound which most people can hear. Now, strike the highest note. It is not even 5,000 hertz so there are many, many more sounds between the highest piano note and the 20,000 hertz limit beyond which most people cannot hear.

Even with our vast range of hearing, there is still a great deal of sound which we miss. Perhaps you've seen a dog perk up his ears and listen very intently to something when it seemed very quiet to you. Dogs can hear higher frequency sounds than people can, so

he was probably hearing something which you could not hear.

Sounds at frequencies higher than we can hear are called **ultrasound**. Ultrasound is useful. Some is of so high a frequency that its waves of compression and rarefaction can be used to clean items that would be damaged by more vigorous mechanical scrubbing.

There is a great deal of sound we cannot hear on the other end of the scale, too. These low frequency sounds are called **infrasound**. Nature is very noisy in sounds below 20 hertz. The ocean waves roll against the Pacific shores and create low frequency noises that scientists with special instruments can "hear" as far away as Colorado. That's more than one thousand miles from the ocean, with some of the nation's highest mountains lying in between.

How can they hear the ocean in Colorado? They are using a special microphone system to listen to the ocean waves in infrasound—sound with a frequency too low to be heard by our ears. Although all sounds with frequencies less than 20 hertz can be called infrasound, scientists are particularly interested in sounds with frequencies less than one hertz because these sounds travel for thousands of miles.

A scientist "listening" at an infrasound post can hear a tornado a long way away. He can listen to a distant thunderstorm and tell which way it is going. He can hear an earthquake in Alaska from a listening point in Washington, D.C.

Eavesdropping on earthquakes in infrasound is not the same as seismological observations. Seismometers measure movement in the earth's surface at the point where the seismometer is located. Infrasound networks actually hear sound waves which were created when the earth's surface moved at another far-distant point.

Since infrasound has too low a frequency to be heard by the ear, scientists "listen" through special instruments which trace out the patterns of the sound waves arriving at the microphones of the infrasound network. Infrasonic microphones actually measure small changes in atmospheric pressure. Since infrasonic pressure changes are so small, wind noises around the microphone must be filtered out. This is done through a 1,000-foot-long piece of pipe leading to the microphone. There are "leaks" in the pipe every 5 to 10 feet. Wind and other nearby noises will then be damped out. When their sound waves touch the pipe, some of the pressure changes leak out through

the holes. Infrasound, with its much longer wave lengths, arrives unchanged at the microphone.

Sometimes, the scientists don't know what is making the noise, and they have to study the daily newspaper to see what happened that might have caused a particular noise. One strange infrasound which was recorded in Colorado was later identified as the explosion of a powder plant in Missouri. Scientists pinned this sound mystery down because the explosion at the manufacturing plant occurred at just the right time to be recorded on their instruments as a loud, peculiar infrasound wave.

On August 12, 1966, scientists recorded a strange sound and, after studying the pattern of the sound waves, they decided that there must have been an explosion—probably a volcano—somewhere near Indonesia. After checking the news carefully, they found a report that Mt. Awu in Indonesia had indeed erupted.

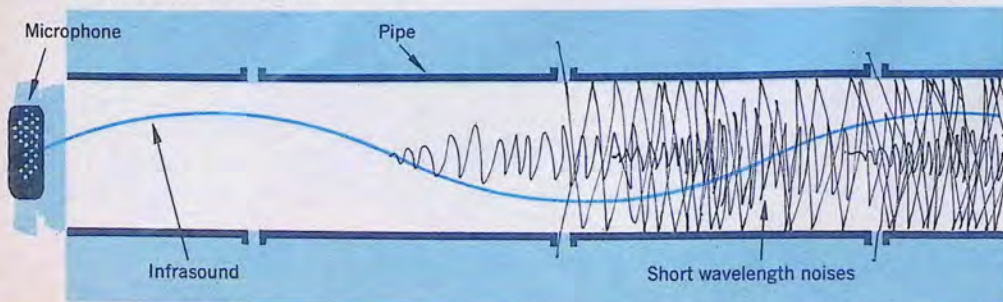
This sort of scientific sleuthing has a purpose, of course. For one thing, scientists are very interested in knowing when a violent thunderstorm is coming their way. Or where a tornado is. Or when a volcano erupts. Infrasonic detectives can even tell us when and where a meteorite has fallen to earth, if a satellite



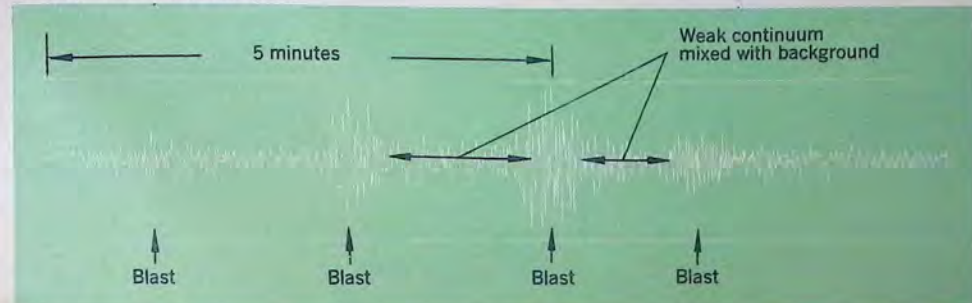
or rocket has reentered the atmosphere, and whether a solar flare from the sun is disturbing our atmosphere.

Each day, as scientists record more and different infrasounds, they learn a little more about the world we live in—a very noisy world indeed.

A 1,000-foot-long pipe is used to filter out wind noises in measuring infrasound. Small, nearby noises enter and leave through "leaks" in the pipe every 5 to 10 feet. Infrasound, with its much longer wavelength, arrives unchanged at the microphone.

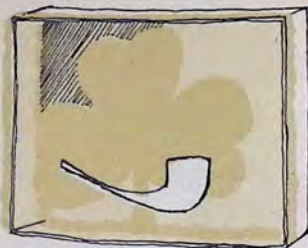


This series of squiggles is an infrasonic recording made in Colorado ninety minutes after a dynamite warehouse explosion in Alabama. The widest fluctuations shown represent a pressure change of only 1.5 millionths of normal atmospheric pressure. Since sound traveling all the way from Alabama to Colorado will encounter a few obstacles, the various peaks of sound represent different travel paths.





# Things To Make



**St. Patrick's Day Shadow Boxes**

By James W. Perrin, Jr.

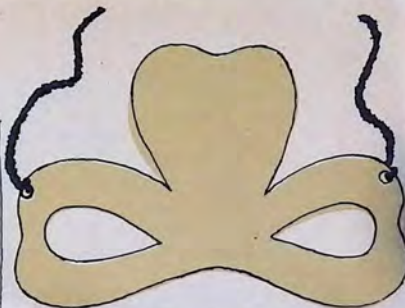
Paint the inside of a shallow box with light green tempera. (If you do not have light green paint, mix a little green with white paint.) Glue a strand of green yarn at the outside edge and the inside edge of the box. Tape a loop of yarn at the back to serve as a hanger. Get a cardboard vegetable tray from the grocery store. Paint it dark green to use for the shamrocks.

For the large shamrock design, make a heart-shaped pattern and



trace it three times, overlapping at the center. Cut this large shamrock from the bottom of the vegetable tray. Glue it to a small piece of sponge and attach the sponge to the back of the box. This gives a three-dimensional effect. Cut the pipe from white cardboard, and attach it on top of the shamrock.

The cluster of small shamrocks have colored-paper stems and stand on grass cut from the same paper.



**Shamrock Maskette**

By Agnes Choate Wonson

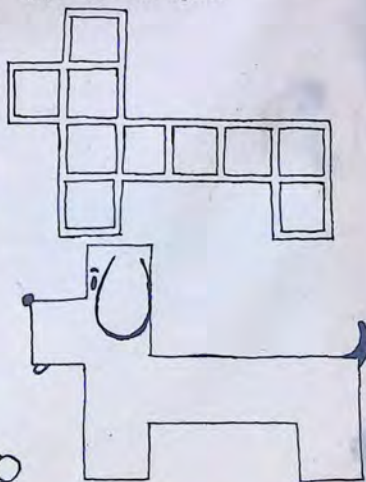
Make a paper pattern of a shamrock. Check that it is the right size for your face and make eye-holes at the right places. Put this pattern on the flat side of a plastic bottle. Trace around the pattern and cut it out.

Color the mask green. Punch a small hole at each side and tie a piece of green yarn in each hole.

**Berry-Basket Figures**

By Betty Nordwall

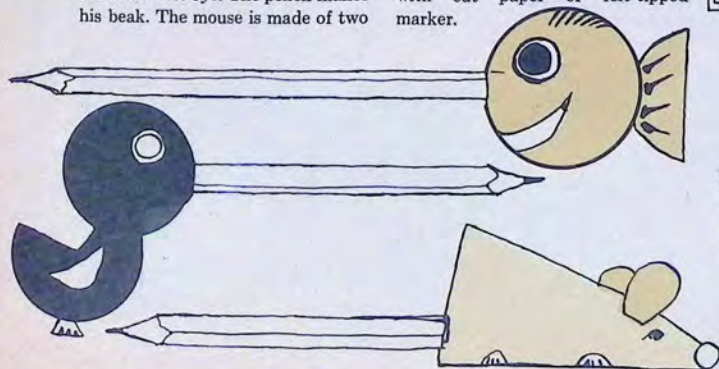
Take a webbed plastic berry basket and study it to decide what simple shapes can be made from it. Cut out the shapes. On paper trace around the outside and fill in the details with crayon. You can decorate greeting cards or wrapping paper with the figures.



**Pencil Pets**

By June Rose Mobly

Here is an easy way to decorate pencils for yourself or to use as gifts. These little "pets" are planned to use the pencil as part of themselves. The crow is made of black construction paper, with yellow feet and a red and white eye. The pencil makes his beak. The mouse is made of two

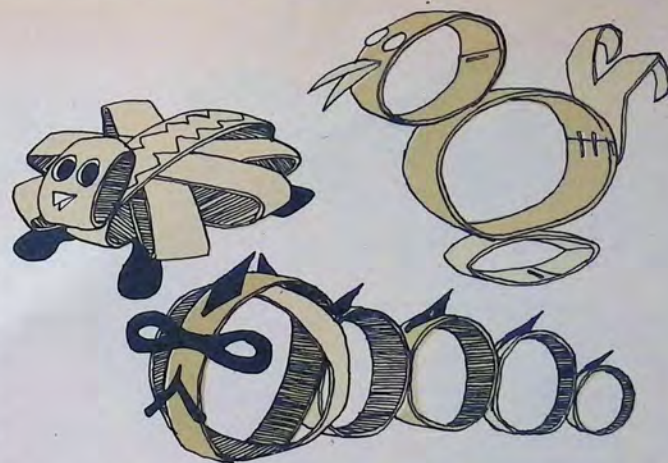


**Loop Zoo**

By James W. Perrin, Jr.

With paper loops and a few cut-paper details, you can make a whole zoo. Cut colored construction paper into 1-inch-wide strips lengthwise. Hold two of the strips together, one on top of the other, and staple or glue the ends together. Make a smaller loop and attach it to the first one. Now you have a body and head. You can make legs, tail, and other parts from different sized loops.

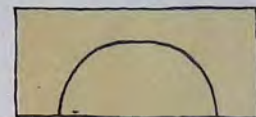
Details such as feathers, eyes, and ears can be cut to shape from construction paper and glued on. For a rounder effect, such as the caterpillar's head, make two loops the same size. Put one inside the other so that they criss-cross. The turtle's body is made in a similar way, but with four loops, squeezed gently until it resembles the turtle's squatty shape.



**Paper Lion**

By Jean Benish

Cut a "hill" from the bottom of a rectangular piece of yellow construction paper. The "hill" will be the lion's head; the remaining part of the yellow paper will be his body. Paste the yellow head in the center of a square piece of brown construction paper. Cut the edges of the brown square jagged to represent the lion's mane. Paste the mane and head to the upper left-hand corner of the body shape. Cut ears from another piece of yellow paper, and paste in place.



Make the eyes, nose, tongue, whiskers, and tail from different colors of paper.

**Leprechaun Family**

By James W. Perrin, Jr.

For each leprechaun, select a grouping of plastic containers, lids, and caps. Paste a layer of paper toweling to cover each part.

Glue the parts together and attach a circle of cardboard to cover the top. Paint with tempera. Glue on yarn hair and construction-paper features. Hats can be made from felt or colored paper.







## Headwork

Is Mary a girl or boy?  
 Do you smell with your ears?  
 Would you like to be as big as your daddy?  
 Do you eat milk or drink it?  
 Does a dog purr? Does a cat?  
 Would you like to hold a baby rabbit in your hands?  
 Show what you do when you shiver.  
 Why do some little children sit in a high chair at the dinner table?  
 Which is larger, a peach seed or an apple seed?  
 Can you sleep while standing on your feet?  
 Do a man's whiskers grow on his feet or on his face?  
 Do you wash your hands for dinner yourself?  
 After a family had finished dinner and gone into the living room, Luanne's father said to her, "You must have dropped some food on your blouse."  
 What caused him to say this?

Why do we have clocks?  
 Is it easier to pull a sled over ice or over bare ground?

Do you get wetter outside while it is snowing or when it is raining?

"A cat or something else must have disturbed that robin and her babies," said Marilyn. What could have caused her to say this?

What is the difference between bread and dough?

Suppose two boys used a board for a seesaw and one boy was much heavier than the other. Which boy would need the longer part of the board on his side?

Does your heart beat while you are asleep?

Which can jump over a higher fence, a cow or a deer?

While the Branning family were eating dinner, Mrs. Branning looked out the window and said, "I wonder who is sick at the Coleman's?" What caused her to say this?

Why don't parades march through the country instead of a city or town?

Will a wooden box rust? Will a tin box?

Which multiplication table was easiest for you to learn by heart?

Do you think a child four or five years old would learn as much on a motor trip to famous places as a child twelve or fourteen would? Why?

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Ask for the free Highlights Sales Opportunity Booklet.



Fahd Dosari, Age 8



Ied Moh'd Diwahi, Age 10



Fahed Nayal Al-Moseab, Age 11

## Drawings by Children of Saudi Arabia



Naser Salad Ehdeen, Age 12



Abdelbahir Ahmed Alasfor, Age 10



Moh'd Hannash Zehri, Age 11



S. Cotb, Age 10



Azooz, Age 10



Ahd Iaziez Ahmad Darwish, Age 10



Good-bye!



until next month

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